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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,997	07/14/2000	Matthew D. Brown	13428	6403

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SMART & BIGGAR
1000 DE LA GAUCHETIERE STREET WEST
SUITE 3400
MONTREAL, QUEBEC H3B 4W5,
CANADA

EXAMINER	
DUONG, FRANK	
ART UNIT	**PAPER NUMBER**
2666	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/616,997	BROWN ET AL.	
	Examiner	Art Unit	
	Frank Duong	2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 July 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-22,24,25,28-35 and 38* is/are rejected.

7)☒ Claim(s) *10,23,26,27,36 and 37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is a response to the communication dated 07/14/2000. Claims 1-38 are pending in the application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-9, 11-22, 24-25, 28-35 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Solheim et al (USP 6,522,671) (hereinafter "Solheim").

Regarding **claim 1**, in accordance with Solheim reference entirety, Solheim discloses a method of converting a received client signal (*Fig. 1; signal Sin1 or Sin2*) containing client data units into a frame-based transport signal at a higher bit rate (Fig. 1; signal Sout), comprising the steps of:

creating successive payload sections each accommodating the same number of transport data units (604), each transport data unit being set either to a received client data unit (606) or to a dummy data unit (608) (Figs. 1-6 and col. 7, lines 13-33); and

creating successive frames of the transport signal by appending ancillary data (OH) to each payload section (*col. 7, lines 34-40*);

wherein the number of client data units carried by the payload section of each frame is within one client data unit of the actual number of client data units received during the duration of that frame (*col. 7, line 41 to col. 8, line 15*).

Regarding **claim 2**, in addition to features recited in base claim 1 (see rationales discussed above), Solheim further discloses wherein the number of client data units received during the duration of a frame is a whole number (N) (*col. 7, line 45 and thereinafter*); and wherein the number of client data units carried by the payload section of each frame is exactly equal to said whole number (16) (*col. 7, line 50 and thereinafter*).

Regarding **claim 3**, in addition to features recited in base claim 2 (see rationales discussed above), Solheim further discloses wherein said whole number is less than the number of transport data units accommodated by the payload section of a frame (*col. 7, lines 50-53*).

Regarding **claim 4**, in addition to features recited in base claim 1 (see rationales discussed above), Solheim discloses wherein the number of client data units received during duration of a frame a fractional number falling between two adjacent integers FL and FH (*col. 7, lines 54-60*); and wherein number of client data units carried the payload section each frame equal either FH or FH (col. 7, line 61 to col. 8, line 15); and wherein the ancillary data (OH) associated with the frame contains information related chosen number of client data units carried by the payload section in that frame (*col. 7, lines 33-40*).

Regarding **claim 5**, in addition to features recited in base claim 4 (see rationales discussed above), Solheim further discloses wherein the integers FL and FH are functions the data unit rate of the client signal and the frame rate the transport signal (*col. 7, lines 50-64*).

Regarding **claim 6**, in addition to features recited in base claim 4 (see rationales discussed above), Solheim further discloses wherein the integer FL is equal to the greatest integer which is less than or equal the number of client data units received per second multiplied by the duration of a frame (col. 7, lines 43-64).

Regarding **claim 7**, in addition to features recited in base claim 4 (see rationales discussed above), Solheim further discloses wherein the information related the number client data units carried by the payload section of frame is redundantly encoded in the ancillary data associated with that frame (*col. 7, lines 33-40*).

Regarding **claim 8**, in addition to features recited in base claim 4 (see rationales discussed above), Solheim further discloses temporarily storing the received client data units buffer (206 or 208) having measurable fill level (FL1 or FL2), wherein the number of client data units carried by payload section each frame is function of the fill level of the buffer (*col. 7, lines 60-64*).

Regarding **claim 9**, in addition to features recited in base claim 1 (see rationales discussed above), Solheim further discloses claim wherein client data units are substantially evenly distributed within the payload section of each frame of the transport signal (*see Fig. 6 and col. 7, lines 43-60*).

Regarding **claim 11**, in addition to features recited in base claim 1 (see rationales discussed above), Solheim further discloses extracting a client clock signal from the client signal (*Figs. 4-5 and col. 5, lines 57-65*); processing the client clock signal to produce a transport clock signal frequency times frequency of M/N times the frequency of the client clock signal, where M and N are integers (col. 5, line 66 to col. 6, line 59); and outputting the transport signal in synchronism with the transport clock signal (*col. 5, lines 32-37*).

Regarding **claim 12**, in addition to features recited in base claim 11 (see rationales discussed above), Solheim further discloses wherein the values of M and N are transmitted as part ancillary data (OH) associated with at least one frame (*col. 7, lines 33-40*).

Regarding **claim 13**, in addition to features recited in base claim 1 (see rationales discussed above), Solheim further discloses wherein the transport signal is compliant with the G.975 standard (*col. 1, line 44-45. Solheim discloses the invention is compliant to GR-253; thus encompasses ITU-T G.957*).

Regarding **claim 14**, it calls for a computer program performing the steps of method claim 1. The claim is rejected by the same rationales applied to claim 1 (see above discussion).

Regarding **claim 15**, in accordance with Solheim reference entirety, Solheim discloses a system (Fig. 1 or 2) for converting received client signal (Fig. 2; Oin1 or Oin2) containing client data units frame-based transport signal (*col. 1, lines 51-59*), comprising:

first processing module (Fig. 2; 110) adapted output transport data units (Fig. 6), each of which set either one received client data units (606) or to a dummy data unit (608), the first processing module being further adapted ensure that number of client units output during each frame within one client data the number of client data units received during the duration of that frame (*col. 4, lines 36-47 and thereinafter*); and

second processing module (*Fig. 2; 202 and 206 or 204 and 208*) connected to the first processing module (*see Fig. 2 for connections between elements*) and adapted create successive payload sections each accommodating the same number of transport data units (BD1 or BD2) received from the first processing module, second processing module being further adapted to create successive frames of the transport signal (*Fig. 2; Oout*) by appending an ancillary data section (OH) to each payload section (604) (*see Fig. 6*) and outputting the data units in the ancillary section and the payload section faster than the rate at which the client signal is received (col. 4, lines 36-47 and col. 8, lines 30-53).

Regarding **claim 16**, in addition to features recited in base claim 15 (see rationales discussed above), Solheim further discloses clock recovery circuit (Fig. 5; 502), recovering clock (Ser) which synchronous with the received client signal (Sin1); clock processing module (506, 508, 524 and 504) connected the clock recovery circuit (502) and to the first processing module (110), generating a gating signal (Fig. 4; CKin1) which indicates the first processing module (202) when to output (408) a transport data unit (D1); and clock frequency multiplication circuit (510-520 and 522) connected to the clock recovery module (502) and second processing module (202), for generating the

faster clock signal (CKin1) used by the second processing module outputting the transport signal (D1) (*col. 5, line 47 to col. 6, line 59*).

Regarding **claim 17**, in addition to features recited in base claim 16 (see rationales discussed above), Solheim further discloses wherein the clock recovery circuit comprises an M/N-multiplying phase-locked loop (Fig. 5) wherein M and N are integers (*col. 6, lines 12-26*).

Regarding **claim 18**, in addition to features recited in base claim 16 (see rationales discussed above), Solheim further discloses wherein the values of M and N are supplied by first processing module (110) via a control line (FL1/READ1 or FL2/READ2) (see Fig. 2).

Regarding **claim 19**, in addition to features recited in base claim 16 (see rationales discussed above), Solheim further discloses a memory element (206 or 208) connected to the first processing module (110) and the clock recovery circuit (202), storing client data units (D1 or D2) under control of the clock recovery circuit (Fig. 5) and outputting client data units (BD1 or BD2) to the first processing module (110) under control of the first processing module (110).

Regarding **claim 20**, in addition to features recited in base claim 19 (see rationales discussed above), Solheim further discloses wherein the memory element is adapted produce signal indicative of whether its capacity has reached a pre-determined fill level (FL1/READ1 or FL2/READ2) (see Fig. 2) (*col. 7, lines 60-69*).

Regarding **claim 21**, in addition to features recited in base claim 20 (see rationales discussed above), Solheim further discloses wherein the memory element

(206 or 208) supplies said control signal (FL1/READ1 or FL2/READ2) to the first processing module (110) (*col. 4, lines 17-18*), wherein the first processing module adapted decide how many client data units output during each frame as a function of the value of said control signal (col. 7, line 60 to col. 8, line 15)

Regarding **claim 22**, in addition to features recited in base claim 15 (see rationales discussed above), Solheim further discloses wherein the first processing module (110) adapted output client data units (BD1 or BD2) at substantially periodic intervals (*col. 4, lines 17-26*).

Regarding **claim 24**, in accordance with Solheim reference entirety, Solheim discloses a method (Fig. 7) converting a received transport signal into a client signal, said transport signal comprising series of frames each containing a payload section and an ancillary data section appended the payload section, wherein each payload section comprises a plurality of transport data units each of which is either a client data unit dummy data units (*note: the preamble is corresponding to the optical signal standard GR-0253, disclosed at col. 1, lines 44-45 or signal format depicted in Fig. 6*), the method comprising the steps of:

determining whether each transport data unit in each frame is a client data unit or a dummy data unit (*col. 9, lines 35-41*); and

outputting to a buffer only those transport data units determined to be client data units (*col. 9, lines 41-45*).

Regarding **claim 25**, in addition to features recited in base claim 24 (see rationales discussed above), Solheim further discloses creating the client signal by reading from the buffer at a rate lower than that the transport signal (*col. 9, lines 46-54*).

Regarding **claim 28**, in addition to features recited in base claim 24 (see rationales discussed above), Solheim further discloses determining the values of the numerator and denominator of a clock frequency multiplier ratio; extracting a transport clock signal from the transport signal; processing transport clock signal to produce a client clock signal at a frequency equal the frequency of transport clock signal times clock frequency multiplier ratio; and outputting the client signal synchronism client clock signal (*note: the CDR Demux 702 is similar to CDR Demux 202 discussed in reference to Figs. 4-5 and col. 5, line 14 to col. 7, line 13*, corresponding to the claimed limitations as discussed in the rejection of the preceding claims).

Regarding **claim 29**, in addition to features recited in base claim 28 (see rationales discussed above), Solheim further discloses wherein the values of the numerator and denominator are determined from the ancillary section associated with at least one frame (*col. 7, lines 45-64*).

Regarding **claim 30**, the claim calls for a computer program of claim 24. It is rejected by the same rationales discussed above.

Regarding **claim 31**, in accordance with Solheim reference entirety, Solheim discloses a system (Figs. 6-7) for converting transport signal a client signal, said transport signal comprising series frames each containing a payload section)604) and an ancillary data section (602), wherein the payload section carries transport data units

(606) each of which can be a client data unit or a dummy data (608) (*note: the preamble is corresponding to the optical signal standard GR-0253, disclosed at col. 1, lines 44-45 or signal format depicted in Fig. 6*), the system comprising:

a first processing module (706 and 710 or 708 and 712) adapted to locate the payload section of each received frame and output the transport data units the payload section each frame (*col. 9, lines 46-54*); and

a second processing module (704) connected the first processing module, the second processing module being adapted determine whether each transport data unit is client data unit dummy data unit and to output to only those transport data units found to be client data units (*col. 9, lines 35-45*).

Regarding **claim 32**, in addition to features recited in base claim 31 (see rationales discussed above), Solheim further discloses a buffer (706 or 708) connected the second processing module (704), for temporarily storing the client data units output second processing module and for outputting its contents at a controllable rate (CKin); a clock recovery circuit (702), for recovering a clock which is synchronous with the transport signal; clock frequency multiplication circuit connected to the clock recovery circuit and the buffer, the clock frequency multiplication circuit being adapted to produce a client clock signal at rate which is less than that of the transport signal and provide client clock signal the buffer so as control the output rate thereof (*see Figs. 4-5 and col. 5, line 14 to col. 7, line 13*, corresponding to the claimed limitations as discussed in the rejection of the preceding claims.

Regarding **claim 33**, in addition to features recited in base claim 32 (see rationales discussed above), Solheim further discloses wherein the ancillary data section (OH) associated with least frame contains a numerator and a denominator and wherein the first processing module is adapted to read the numerator and the and to provide these to the clock frequency multiplication circuit (*col. 9, lines 31-45 and col. 5, line 14 to col. 7, line 13*).

Regarding **claim 34**, in addition to features recited in base claim 33 (see rationales discussed above), Solheim further discloses wherein the clock frequency multiplication circuit is an numerator/denominator-multiplying phase-locked loop (*see Figs. 4-5*).

Regarding **claim 35**, in addition to features recited in base claim 31 (see rationales discussed above), Solheim further discloses wherein second processing module adapted output client data units at substantially periodic intervals (*col. 9, lines 46-54*).

Regarding **claim 38**, in accordance with Solheim reference entirety, Solheim discloses a method converting client signal containing client data units frame-based transport signal compatible with transport network and retrieving the client signal at another part of the network, comprising the steps of:

(A) at an ingress interface (*Fig. 2 and col. 4, line 60 to col. 9, line 19*):

creating (210) successive payload sections (Fig. 6) each accommodating same number transport data units (Oout), each transport data unit being set either to a received client data unit (BD1 or BD2) or to a dummy data unit (212);

creating successive frames (210) of the transport signal by appending ancillary data (214) each payload section, wherein the number of client data units carried by the payload section of each frame is within one client data unit of the actual number client data units received during the duration of that frame; and

sending (216) the frames into the transport network towards an egress interface at a data unit rate higher than that of the client signal; and

(B) at the egress interface (*Fig. 7 and col. 9, line 20 to col. 10, line 13*):

determining (704) whether each transport data unit in each frame is a client data unit or a dummy data unit;

outputting (704 and BD1 or BD2) to a buffer (706 or 708) only those transport data units determined to be client data units; and

reading (710 and READ1 or 720 and READ2) from the buffer (706 or 708) at the lower data unit rate, thereby to recover the original client signal.

Allowable Subject Matter

3. Claims 10, 23, 26-27 and 36-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, considered individually or in combination, fails to fairly show or suggest the claimed invention of base claims 1, 24, 15 or 31 and further limit with the novel and unobvious limitation of step/element for incrementing a counter each time a

transport data unit is set either to a client data unit or to a dummy data unit, by an amount equal to the number of client data units carried by the payload section of the current frame, wherein the counter has a modulus equal to the total number of transport data units accommodated by the payload section of each frame, structurally and functionally interconnected with other limitation in a manner as recited in the dependent claims 10, 23, 26-27 and 36-37.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nguyen et al (USP 6,594,279).

Russell et al (USP 6,584,118).

Russell et al (SUP 6,496,519).

Bleickardt et al (USP 5,461,622).

Castellano et al (USP 5,065,396).

Leung, Implementing Packet Transfer over SONET/SDH, PMC-Sierra, Inc., pages 119-122, 1999.

Manchester et al, IP over SONET, IEEE, pages 136-142, May 1998.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Duong whose telephone number is (571) 272-3164. The examiner can normally be reached on 7:00AM-3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank Duong
Examiner
Art Unit 2666

September 16, 2004

FRANK DUONG
PRIMARY EXAMINER